Merlin Data Logger

- Integral sensors for x,y,z acceleration and temperature
- 10 analogue 0-5v, 1 thermocouple and 1 serial input.
- Up to 7 analogue inputs can be configured for frequency inputs from flow meters
- User programmable
- Supports voltage (0-5v) and frequency inputs
- 1 serial channel for RS485 MODBUS data or other protocols as required
- Serial channel can read up to 8 Keller pressure sensors.
- Optional high contrast LCD display with backlight
- Backlight can be turned on and off via a light sensor.
- Internal memory 10M readings
- SD memory card slot
- External power supply11-30vDC or internal battery.
- Power consumption 7mA with display backlight on , 4mA with display off

The Merlin data logger is a compact, low power multi channel device capable of handling a range of analogue and serial inputs, with logging rates of up to 1Hz on analogue inputs and 20Hz on up to three Keller pressure sensors.

It has 10 analogue inputs with a 0-5v input range. Seven of these inputs can also be configured to read frequency inputs from flow meters. The unit also has a serial RS485 port for connection to Keller digital pressure sensors, and other serial devices.

The logger is supplied with windows software and logging projects are easily configured via the menu driven interface. In addition to taking instantaneous readings the logger can also record, minimum, maximum and average values. Each channel can be set with two logging rates: a slow rate for normal data capture and a fast rate which can be triggered by an analogue threshold for fast logging.

The logger has a large high contrast back-lit LCD display, with the option to have a second display fitted. The display is programmable via the software and can be set to show either 12 channels or 3 channels. The dual display option is particularly useful in applications where a number of channels are required to be displayed in large text such as in subsea applications where real time values need to be viewed

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UK / Europe / Office
Tel: +44 (0)845 9000 601
Fax: +44 (0)845 9000 602
info@omniinstruments.co.uk
East Kingsway Business Centre,
Mid Craigie RD, Dundee, Scotland UK.

USA / Canada Office
Tel +1-866-849-3441
Fax +1-866-628-8055
info@omniinstruments.net
7616 DiSalle Blvd, Suite H
Fort Wayne, IN 46825

Australia / Asia Pacific Office
Tel +61 (0)282 442 363
Fax +61 (0)294 751 278
info@omniinstruments.com.au
1 Keast Street, Parkes, NSW
2870 Australia

Merlin Data Logger

The logger is shown here with the display set for 12 channels.

The logger also has an internal 3 axis accelerometer for motion sensing, an internal temperature sensor, and an external input for a K type thermocouple.

Specification - Merlin Data Logger

Analogue Inputs	0-5v DC or AC frequency (on 7 of the 10 analogue inputs), resolution 12 bit (1.2 mV,)
Input Channels	10 analogue, 1 thermocouple, 1 serial RS485 MODBUS/Keller protocol
Internal Sensors	Three axis accelerometer, range +/- 16g, temperature sensor, light sensor
Output Channels	RS232 for serial data, 1 x relay output for sensor power management
Memory Capacity	1,500,000 readings internal + SD memory card slot
Logging Modes	Single point, average, min, and max
Logging Rate	Programmable - 1 Hz up to 12 hours
Data Retention	Over 200 years with no power
Operating Range	-40 to +60 degrees C
Power Supply	External 10-30v DC, consumption 4 mA @ 12v without display
Data Format	Graphic and CSV, suitable for export to Excel
Display	Optional high contrast backlit LCD 1 or 2 x 72 x 45 mm showing up to 12 channels of measurements simultaneously.
Communications	RS232 port for data download and logging control USB port for logger programming and setup Optional optical modem for subsea applications
Software	Windows software included for logger control and programming. Logger control application is a simple user interface to launch logger project and download data. Programming interface provides a menu driven graphical interface for setting up the logger program, downloading and viewing data.
Physical	Extruded aluminium housing with stainless steel end plates. Dimensions: 130 x 95 x 40mm

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info@omniinstruments.co.uk
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USA / Canada Office
Tel +1-866-849-3441
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info@omniinstruments.net
7616 DiSalle Blvd, Suite H
Fort Wayne, IN 46825

Australia / Asia Pacific Office
Tel +61 (0)282 442 363
Fax +61 (0)294 751 278
info@omniinstruments.com.au
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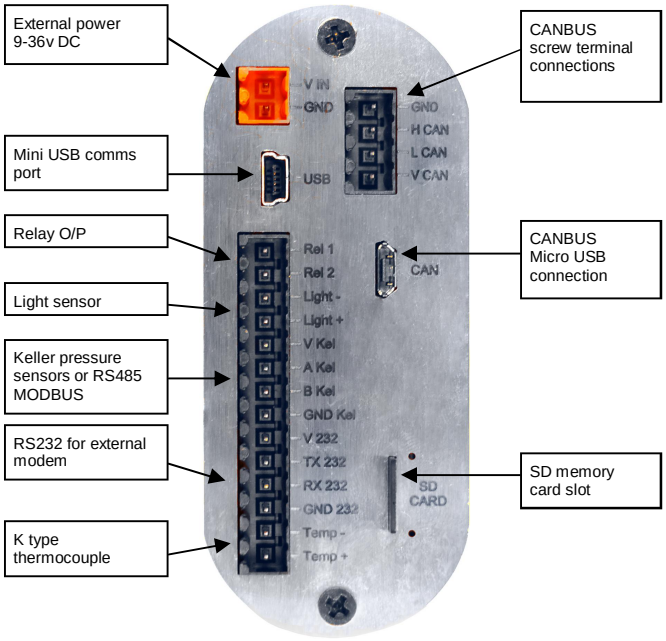
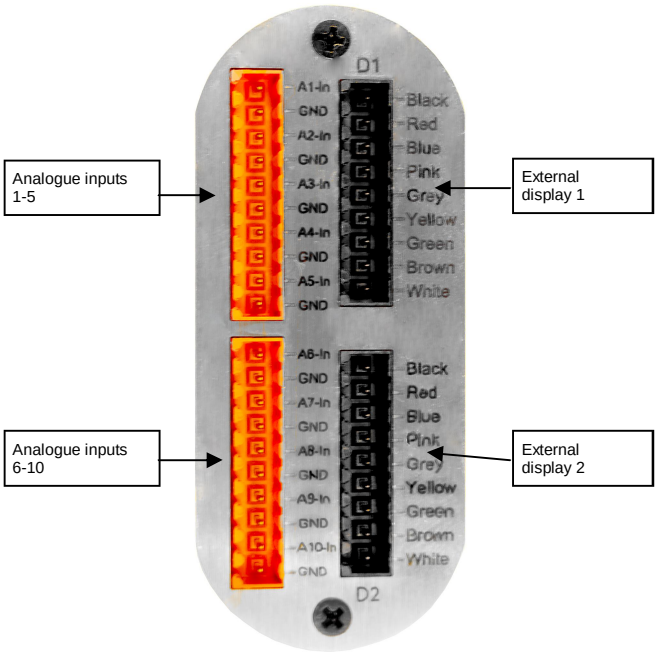
Merlin Data Logger - Connections





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Fax: +44 (0)845 9000 602
info@omniinstruments.co.uk
East Kingsway Business Centre,
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Tel +1-866-849-3441
Fax +1-866-628-8055
info@omniinstruments.net
7616 DiSalle Blvd, Suite H
Fort Wayne, IN 46825

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Tel +61 (0)282 442 363
Fax +61 (0)294 751 278
info@omniinstruments.com.au
1 Keast Street, Parkes, NSW
2870 Australia

Logger Software Overview

The logger is programmed via a user friendly windows software interface with a control panel for starting and stopping logger, uploading new logger configurations, and downloading data.

Logging projects for various sensors inputs, logging rates etc can be quickly and easily created via the menu driven configuration interface.

Downloaded data can be viewed in graph and table format and exported to MS Excel.

Control Panel

The control panel provides a simple interface to connect to the logger, start and stop logging and download data. The logger setup utility is also accessed via the control panel.

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info@omniinstruments.co.uk
East Kingsway Business Centre,
Mid Craigie RD, Dundee, Scotland UK.

USA / Canada Office
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Fort Wayne, IN 46825

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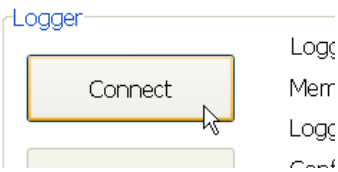
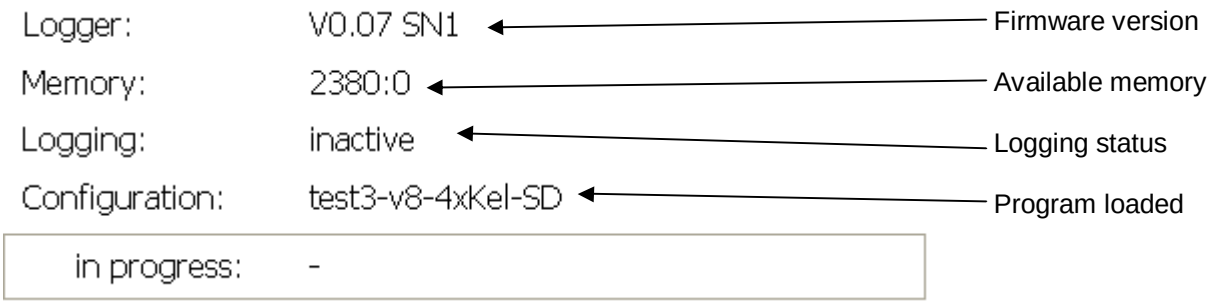
Logger Software Overview

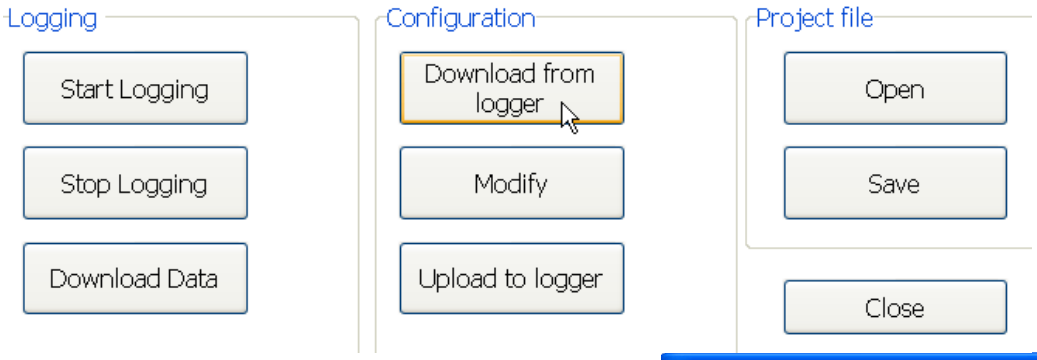
Control Panel

To connect to the logger plug in the USB cable and click the Connect button



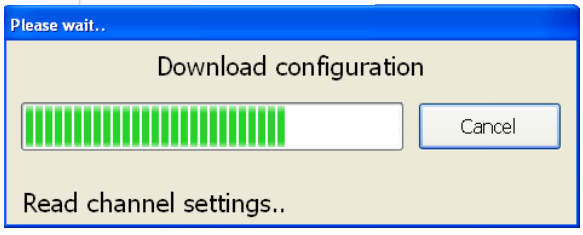
Once connected you will the see the status of the logger:





You can download the configuration that is in the logger by clicking on the ôDownload from loggerô button. Once it has been downloaded you can modify the program by clicking on the ôModifyôor you can open an existing project saved on the PC by clicking on the ôOpenôbutton.

A new or modified program can then be uploaded to the logger using the ôUpload to loggerôbutton.



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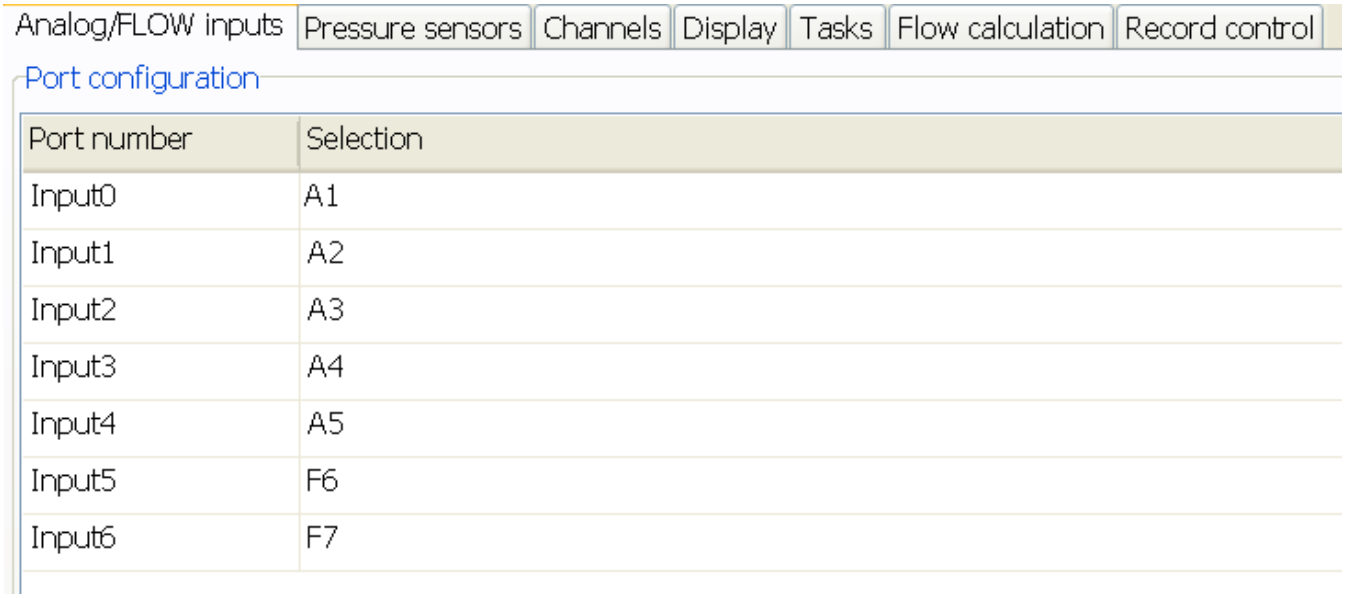
Logger Setup

Once the setup menu has been entered a row of tabs will be displayed for analogue input configuration, serial pressure sensor configuration, active channels, display configuration, logging rates, and maths channels, such as flow calculation.

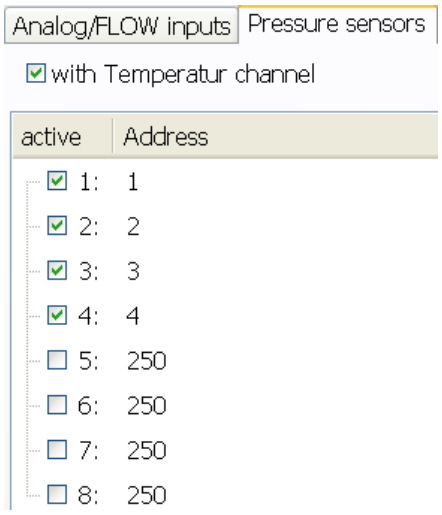
There are 10 analogue inputs, the first 7 of which can be set to 0-5v input, or frequency (for flow meters). Analogue channels 8-10 are only available with 0-5v input.



The pressure sensor tab is for setup of Keller pressure sensors with a serial RS485 output. Standard sensors provide 0.05% accuracy and high precision sensors provide 0.01% accuracy.

Up to 8 sensors can be connected to the serial bus input. In the setup the address of each sensor must be entered. If temperature measurement is required from the sensor the ówith Temperature Channelô box should be ticked.

In this menu the sensor address can be set, which should match the address programmed to each unit.



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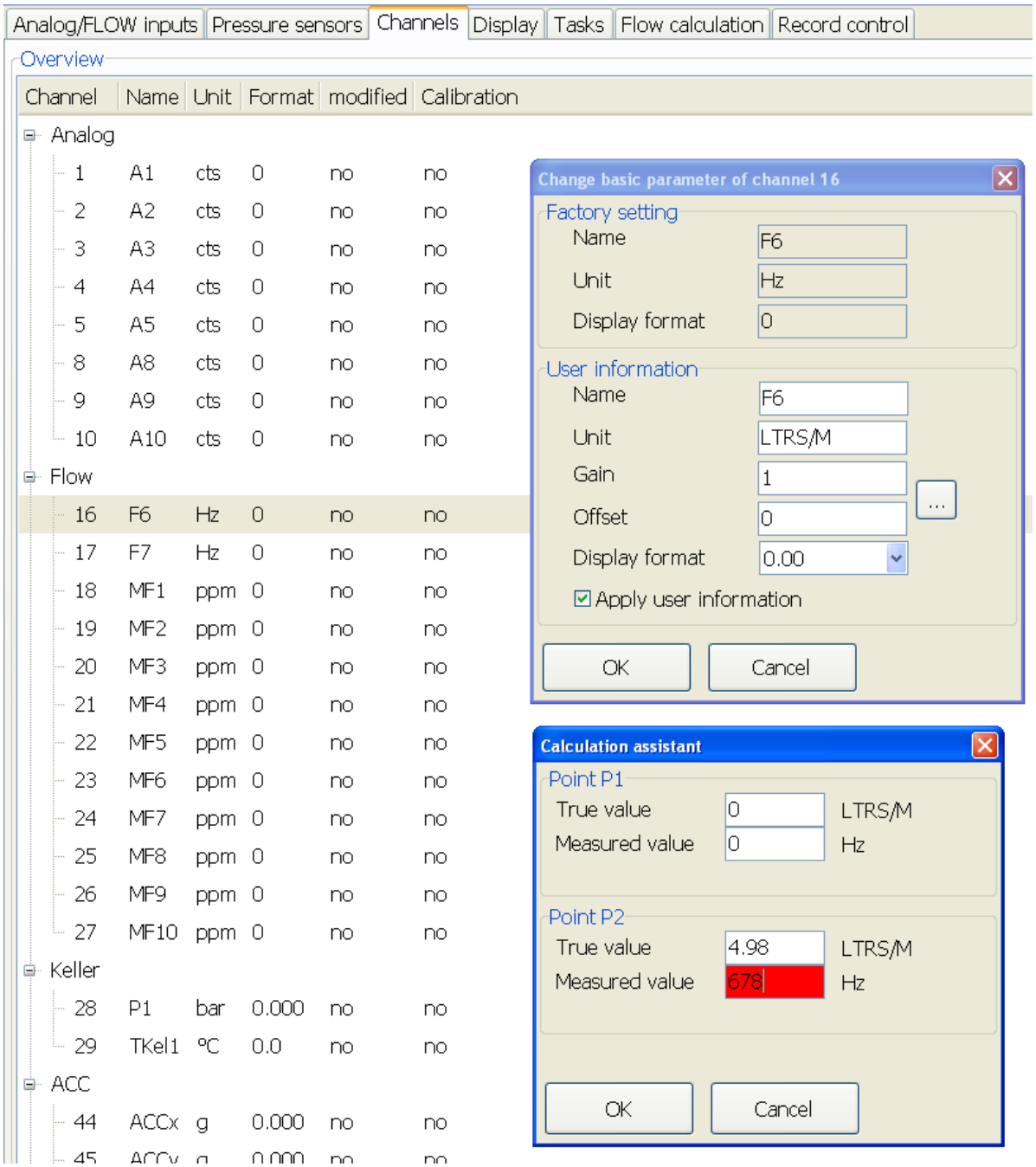
Logger Setup

The Channels setup menu allows each individual channel to be configured with a custom label, and scaling for engineering units with 0 offset and gain automatically calculated. The number of decimal places for the channel to be shown on the LCD display and real time PC display is also set here.



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Fort Wayne, IN 46825

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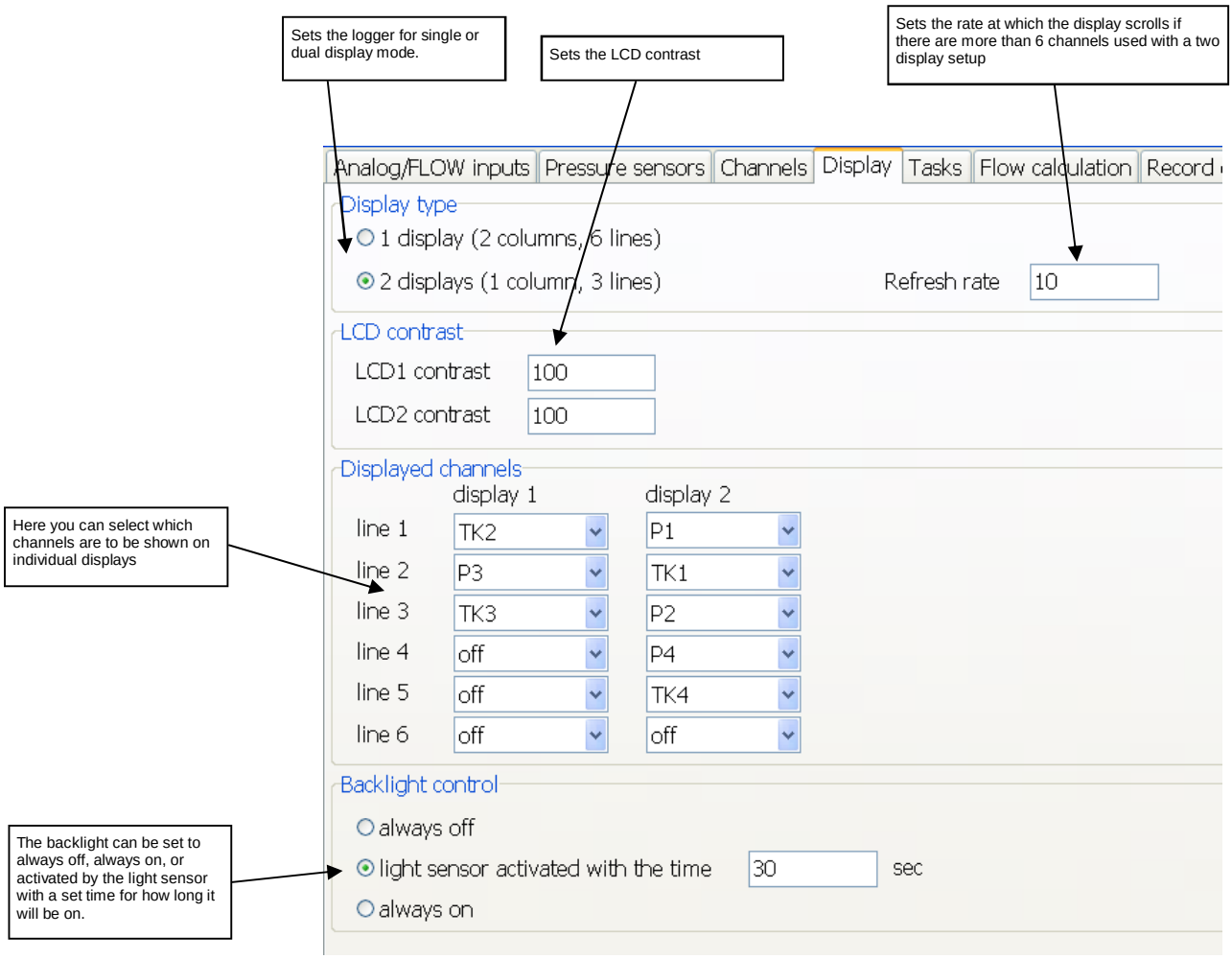
Logger Setup

The display menu is used to define the number of the displays and which channels are shown. If a single display is used up to 12 channels can be displayed in two columns of 6. If two displays are used then up to 12 channels can be displayed, 6 on each display. In this mode each display will show the first three channels and then scroll to the next three channels.

In this menu the LCD contrast is set, and also the control for the backlight. The backlight can be always on, or activated via the light sensor, in which case the time the light stays on after activation can be set in seconds. This function is very useful where the backlight needs to be activated by an ROV using a light.



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info@omniinstruments.net
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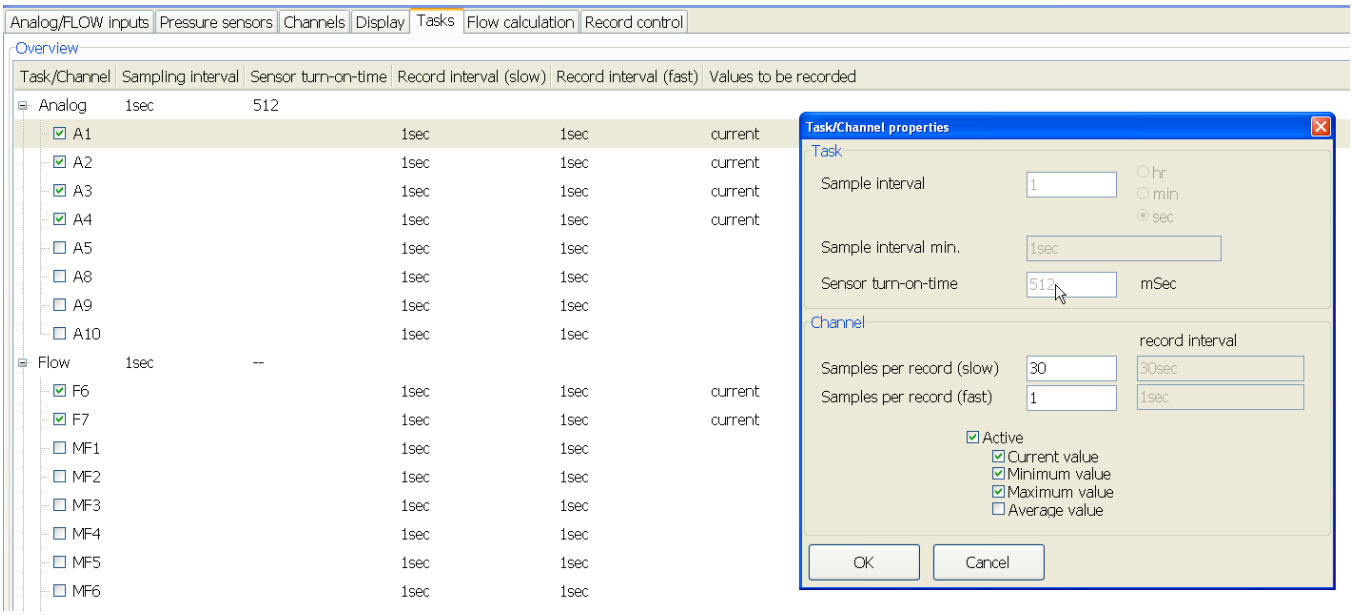
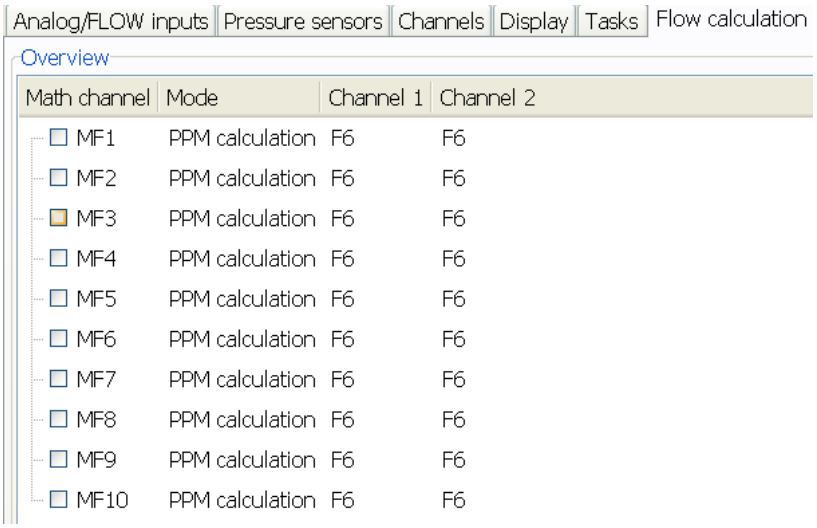
Logger Setup

The tasks menu us used to setup which channels are active, the sample interval, logging rate for each channel (slow and fast), and the parameters to be logged - current value, minimum value, Maximum value and Average.



The Flow Calculation menu is used to select pre defined custom maths calculations for your application



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info@omniinstruments.net
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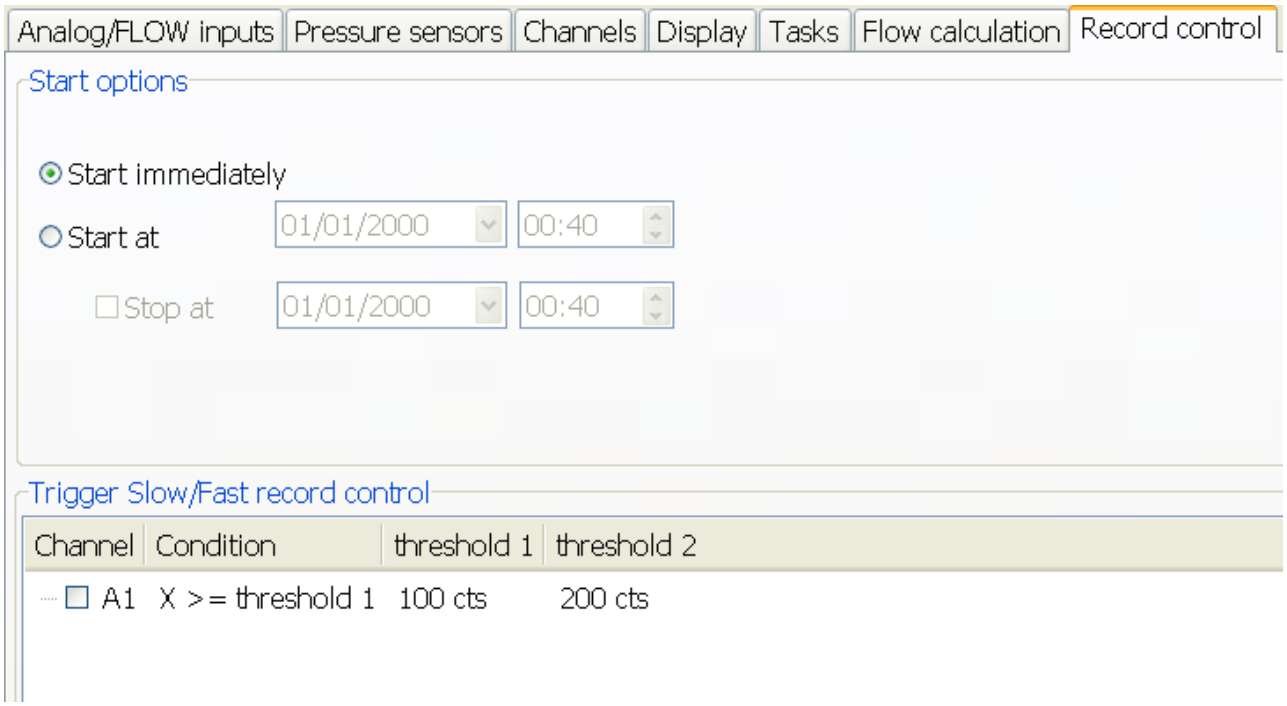
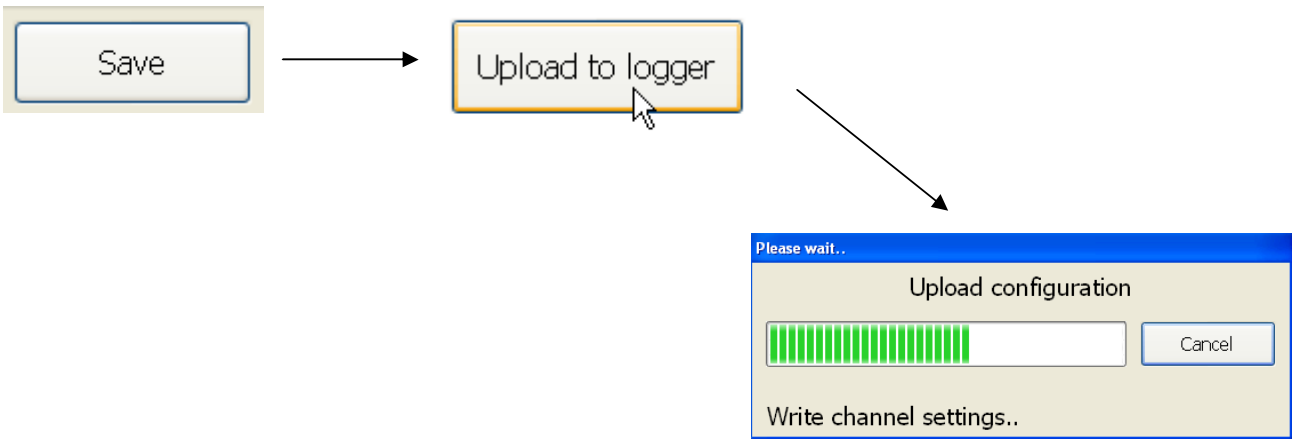
Logger Setup

The record control menu defines the logging start mode - immediate start, or at a pre-defined time. This menu is also used to set an analogue input threshold to trigger fast logging.



Once the setup has been completed it can be saved and uploaded to the data logger. Configurations can also be downloaded from the logger, modified, saved and uploaded back to the logger.



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Fort Wayne, IN 46825

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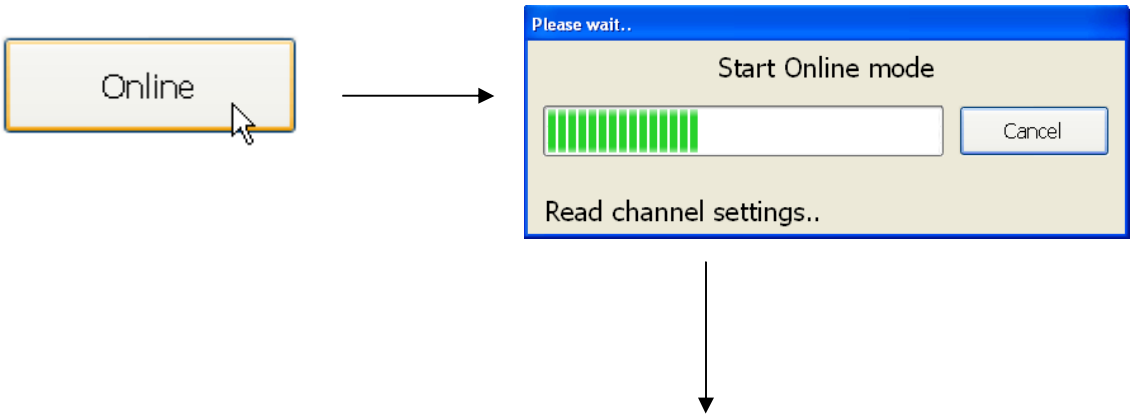
Online Mode

To view real time reading from the logger on your PC screen click on the 'Online' button.



P1	-0.039	bar
TKel1	21.0	°C
P2	-0.034	bar
TKel2	21.0	°C
P3	-0.042	bar
TKel3	21.5	°C
P4	-0.041	bar
TKel4	21.5	°C
ACCx	0.996	g
ACCy	0.036	g
ACCz	0.248	g

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Fax +1-866-628-8055
info@omniinstruments.net
7616 DiSalle Blvd, Suite H
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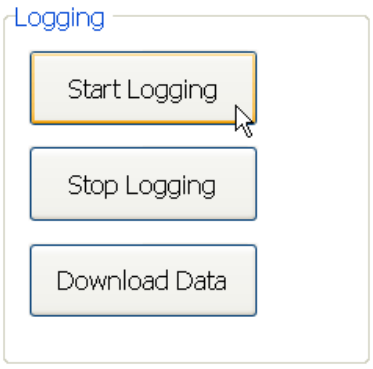
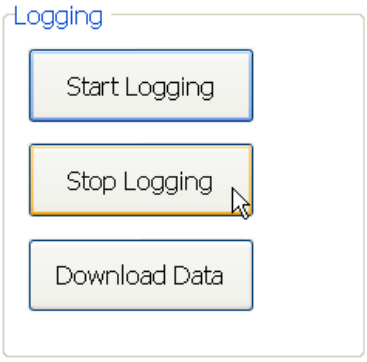
Start Logging

To start logging click on the ôStart Logingôbutton



Stop Logging

To start logging click on the ôStart Logingôbutton



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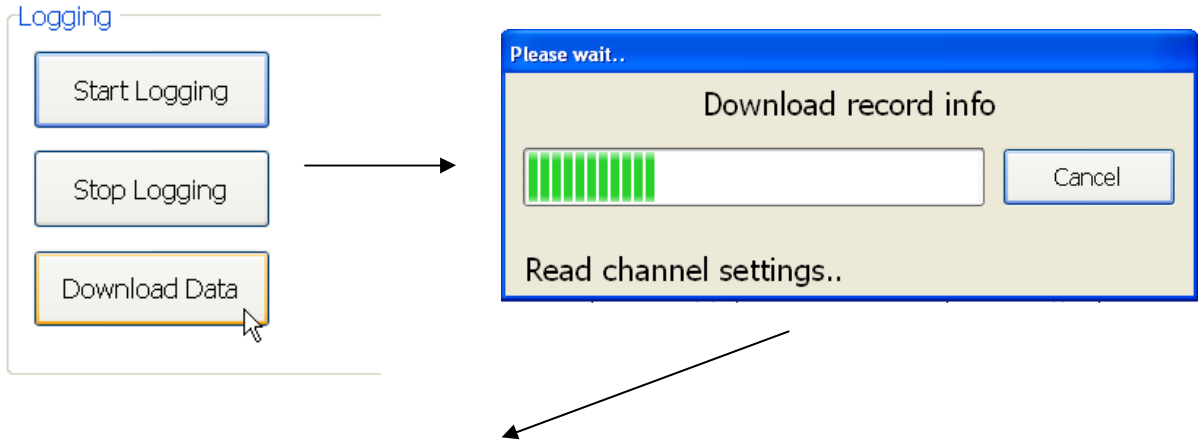
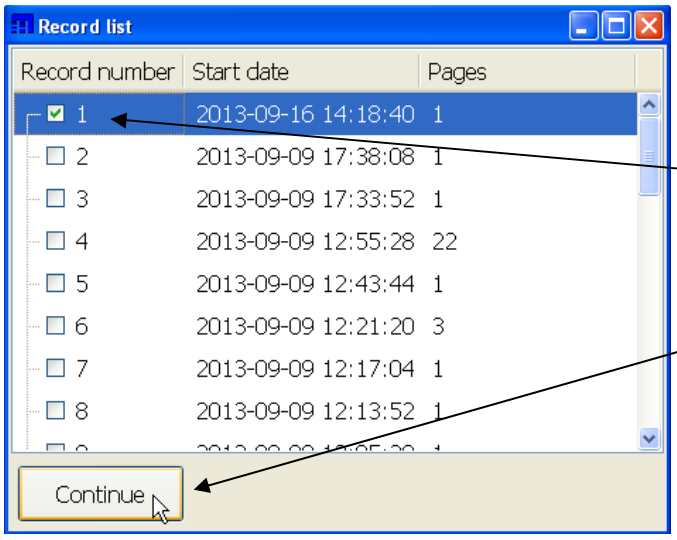
Download Data

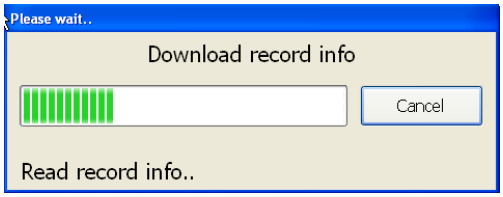
To download data click on the ‘Download Data’ button

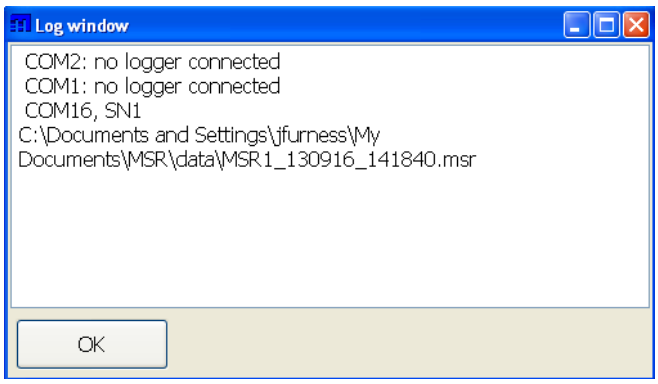




A dialog box will appear showing all logging sessions.

Check the boxes for the logging sessions you wish to download and click ‘Continue’





Once the data has been downloaded a dialog box will appear showing the filename and location for the saved data file.

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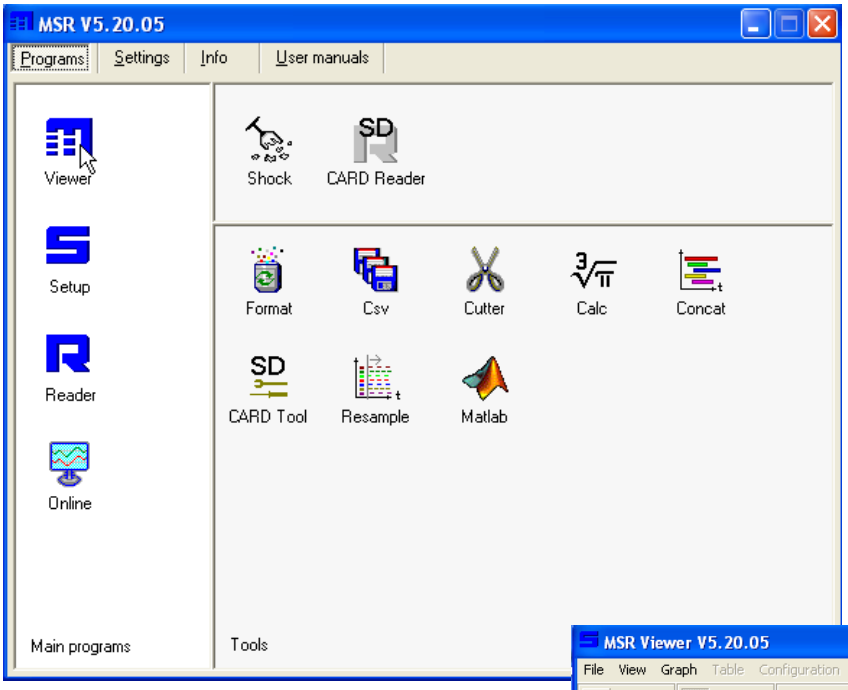
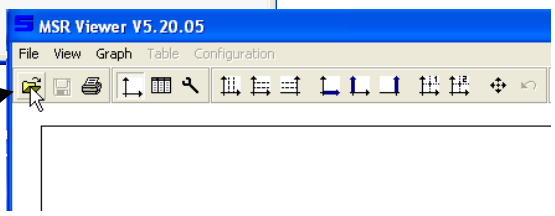
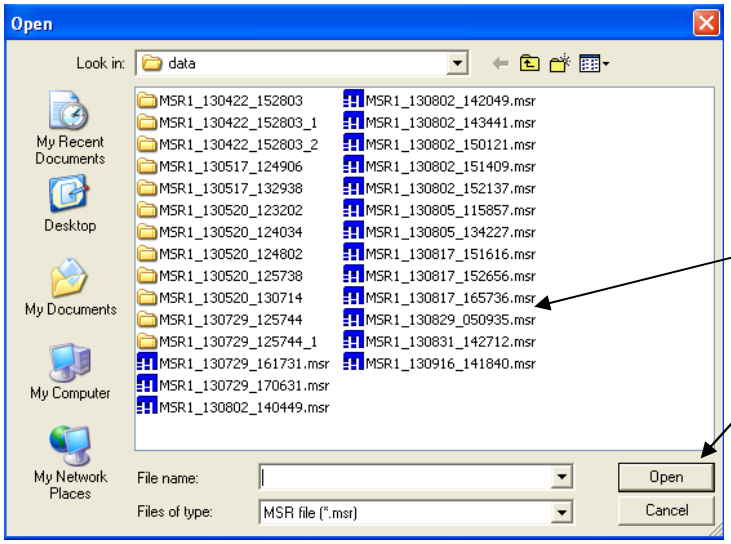
Viewing and exporting downloaded data

To view data from a downloaded data file run the MSR 5 software, and click on the viewer icon



Then click on the open file icon.





A dialog box will appear showing all the saved data files.

Select the file you wish to open and click on the open button

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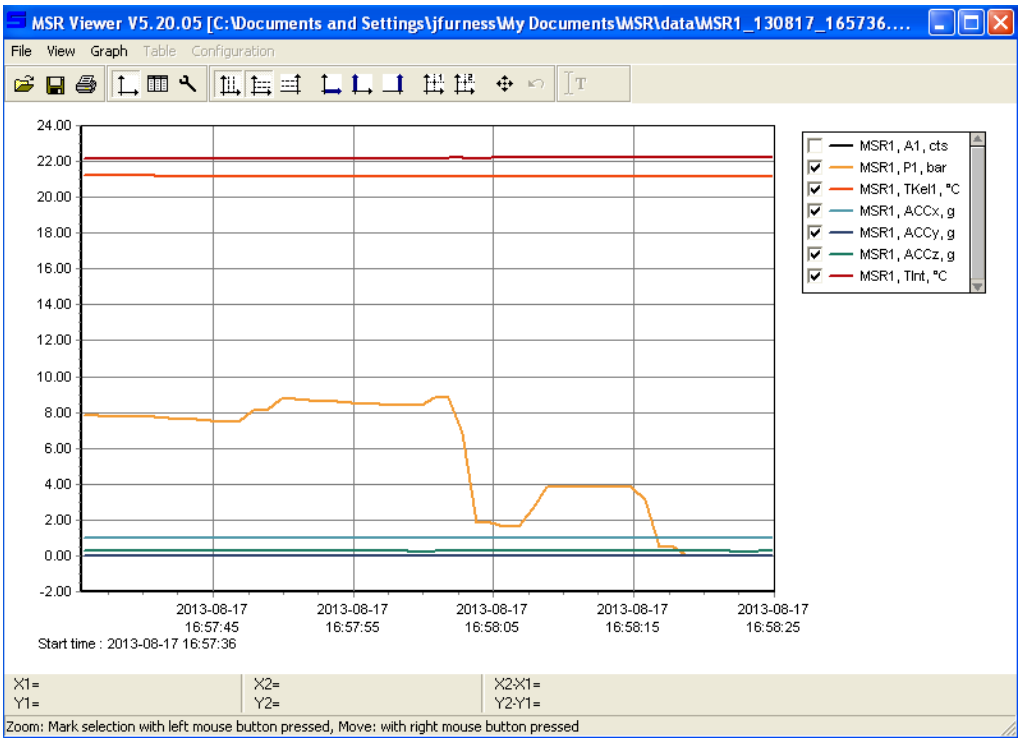
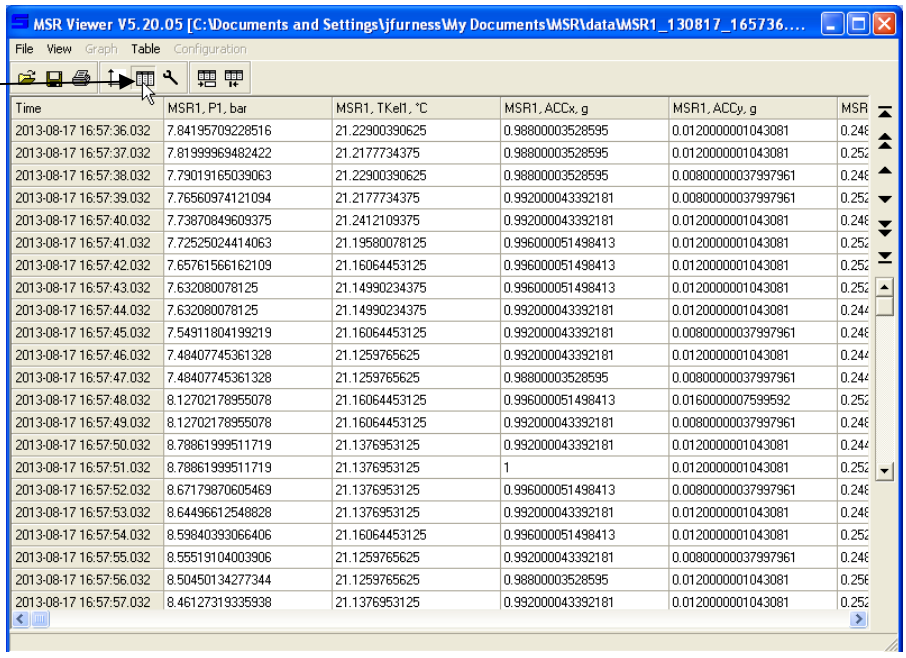
Viewing and exporting downloaded data

The data file will open in the graph view. Channels shown on the graph can be activated or turned off by checking or un-checking the channels in the channel list to the right of the graph display



Data can also be viewed in a table format by clicking on the table icon.



Time	MSR1, P1, bar	MSR1, TKel1, °C	MSR1, ACCx, g	MSR1, ACCy, g	MSR
2013-08-17 16:57:36.032	7.84195709228516	21.22900390625	0.98800003528595	0.0120000001043081	0.248
2013-08-17 16:57:37.032	7.81999969482422	21.2177734375	0.98800003528595	0.0120000001043081	0.252
2013-08-17 16:57:38.032	7.79019165039063	21.22900390625	0.98800003528595	0.00800000037997961	0.248
2013-08-17 16:57:39.032	7.76560974121094	21.2177734375	0.992000043392181	0.00800000037997961	0.252
2013-08-17 16:57:40.032	7.73870849609375	21.2412109375	0.992000043392181	0.0120000001043081	0.248
2013-08-17 16:57:41.032	7.72525024414063	21.19580078125	0.996000051498413	0.0120000001043081	0.252
2013-08-17 16:57:42.032	7.65761566162109	21.16064453125	0.996000051498413	0.0120000001043081	0.252
2013-08-17 16:57:43.032	7.632080078125	21.14990234375	0.996000051498413	0.0120000001043081	0.252
2013-08-17 16:57:44.032	7.632080078125	21.14990234375	0.992000043392181	0.0120000001043081	0.244
2013-08-17 16:57:45.032	7.54911804199219	21.16064453125	0.992000043392181	0.00800000037997961	0.248
2013-08-17 16:57:46.032	7.48407745361328	21.1259765625	0.992000043392181	0.0120000001043081	0.244
2013-08-17 16:57:47.032	7.48407745361328	21.1259765625	0.98800003528595	0.00800000037997961	0.244
2013-08-17 16:57:48.032	8.12702178955078	21.16064453125	0.996000051498413	0.0160000007599592	0.252
2013-08-17 16:57:49.032	8.12702178955078	21.16064453125	0.992000043392181	0.00800000037997961	0.248
2013-08-17 16:57:50.032	8.78861999511719	21.1376953125	0.992000043392181	0.0120000001043081	0.244
2013-08-17 16:57:51.032	8.78861999511719	21.1376953125	1	0.0120000001043081	0.252
2013-08-17 16:57:52.032	8.67179870605469	21.1376953125	0.996000051498413	0.00800000037997961	0.248
2013-08-17 16:57:53.032	8.64496612548828	21.1376953125	0.992000043392181	0.0120000001043081	0.248
2013-08-17 16:57:54.032	8.59840393066406	21.16064453125	0.996000051498413	0.0120000001043081	0.252
2013-08-17 16:57:55.032	8.55519104003906	21.1259765625	0.992000043392181	0.00800000037997961	0.248
2013-08-17 16:57:56.032	8.50450134277344	21.1259765625	0.98800003528595	0.0120000001043081	0.256
2013-08-17 16:57:57.032	8.46127319335938	21.1376953125	0.992000043392181	0.0120000001043081	0.252

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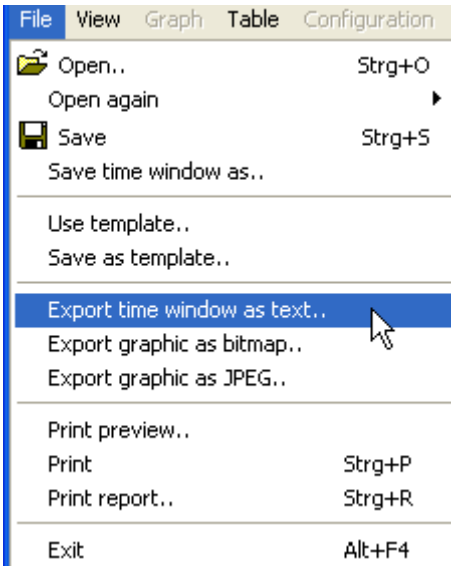
UK / Europe / Office
Tel: +44 (0)845 9000 601
Fax: +44 (0)845 9000 602
info@omniinstruments.co.uk
East Kingsway Business Centre,
Mid Craigie RD, Dundee, Scotland UK.

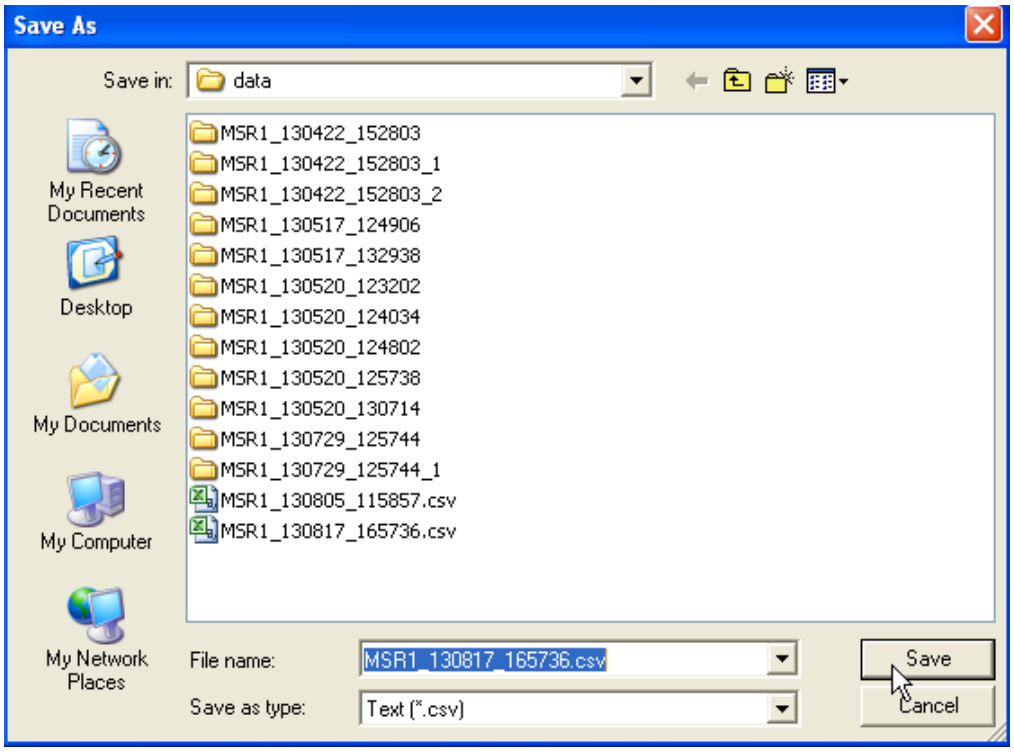
USA / Canada Office
Tel +1-866-849-3441
Fax +1-866-628-8055
info@omniinstruments.net
7616 DiSalle Blvd, Suite H
Fort Wayne, IN 46825

Australia / Asia Pacific Office
Tel +61 (0)282 442 363
Fax +61 (0)294 751 278
info@omniinstruments.com.au
1 Keast Street, Parkes, NSW
2870 Australia

Viewing and exporting downloaded data

To export the data to MS XLS click on óFileô and select óExport time window as text ..





The file will be converted to a .CSV file which can be opened in MS XLS, Notepad, and various data base application for further manipulation and reporting etc.

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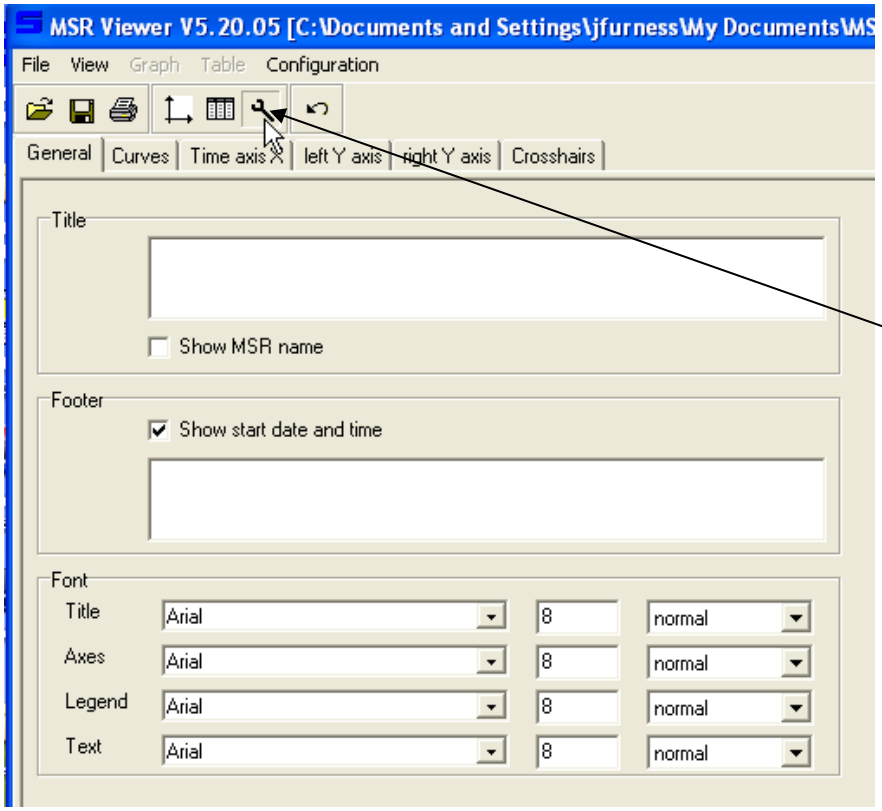

The setup for the graph including X and Y axis, curve colours and thickness can be accessed in setting menu.

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